



*"Miriam! He's asking for help with his HTML homework.
What the heck is he talking about?!"*

Part 2:

HTML 4.0 Intermediate

Mastering Web Frames and Tables

Part 2 Description

Welcome to *HTML 4.0 Intermediate*, the second part in DDC's *Mastering HTML* Series. This section provides students with a continuation of DDC's *HTML 4.0 Fundamentals*, an introductory-level HTML course.

This section provides an in-depth review of frames and the mechanisms required to create both links between frames and Web site navigation bars. Tables are also examined in depth, including nesting tables within tables, embedding lists in tables, creating page columns with tables, and spanning table rows and columns.

Part 2 Objectives

This course was developed for Webmasters, HTML scripters, and anyone publishing Web pages and Web sites. This course utilizes lecture material, hands-on exercises, and lesson-specific quizzes to teach:

- Overview of frames
- Formatting frames
- Combining frame rows and columns
- Creating links between frames
- Using inline frames
- Overview of tables
- Using tables to create a two-column page layout
- Advanced table features and formatting
- Embedding lists within tables
- Nesting tables within tables

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Lesson 8 **Introduction** **to Frames**

Lesson Topics

- ▶ What are Frames?
- ▶ Anatomy of Frames
- ▶ <FRAMESET> Tag
- ▶ <FRAME> Tag
- ▶ Lesson 8 Summary

What are Frames?

A *frame* is an HTML page layout convention that enables Web pages to be divided into a series of rectangular sections, similar to boxes. Frames are very flexible in their application and configuration.

You can control the following features of frames:

- whether a frame displays borders;
- how or if a frame displays scroll bars (never display or automatically display when necessary based on user browser size configuration) ;
- various levels of margin white space within the frame;
- whether frame borders are movable.

Display Multiple HTML Documents on a Single Page

The most significant aspect of a multiple-frame HTML page is that *each frame displays a separate HTML document*. Clicking on a hyperlink in a document displayed in one frame can cause the contents of that or a different frame to change. You may find this useful if you want to ensure that a table of contents, navigation bar, or some other element remains on the user's screen as he or she browses from page to page.

Although frames have been in use since they were introduced with Netscape Navigator 2.0 in January 1996, they have not been officially supported by the HTML Specification until version 4.0 (April 1998). Today frames are supported by all major Web browsers, including:

- Netscape Navigator 2.0 and its more recent versions;
- Microsoft Internet Explorer 2.1 and its more recent versions;
- Opera (all versions).

Navigation Bars

A common application of frames is a navigation bar, often called a “nav bar,” along the left or right side of a Web page. Because most sites want to provide this nav bar on all pages of a Web site, the HTML document containing the nav bar need be created only once and then referred to from the nav bar frame of every page of the site. The “content” of the site is contained in the opposite frame of the page and changes according to links the user clicks in the nav bar or within the body of the content frame.

In Lesson 10: *Linking Frames*, you will learn to create frames that contain anchors that, when clicked, change not their own contents but the contents of other frames on the page. In this manner, you can create nav bars and other sophisticated navigation schemes on a Web site.

Exercise 8-1: Observing Different Frame Configurations

In this exercise, you will view Web pages displaying frames in different configurations.

1. Click once in the URL field, type the following address, and press <ENTER>:

➤ **www.familycenteredcare.org**



The homepage is downloaded and displayed. Note the layout of the frames, as shown in Figure 8-1. These frames are “invisible” in that there is no visible border between them.

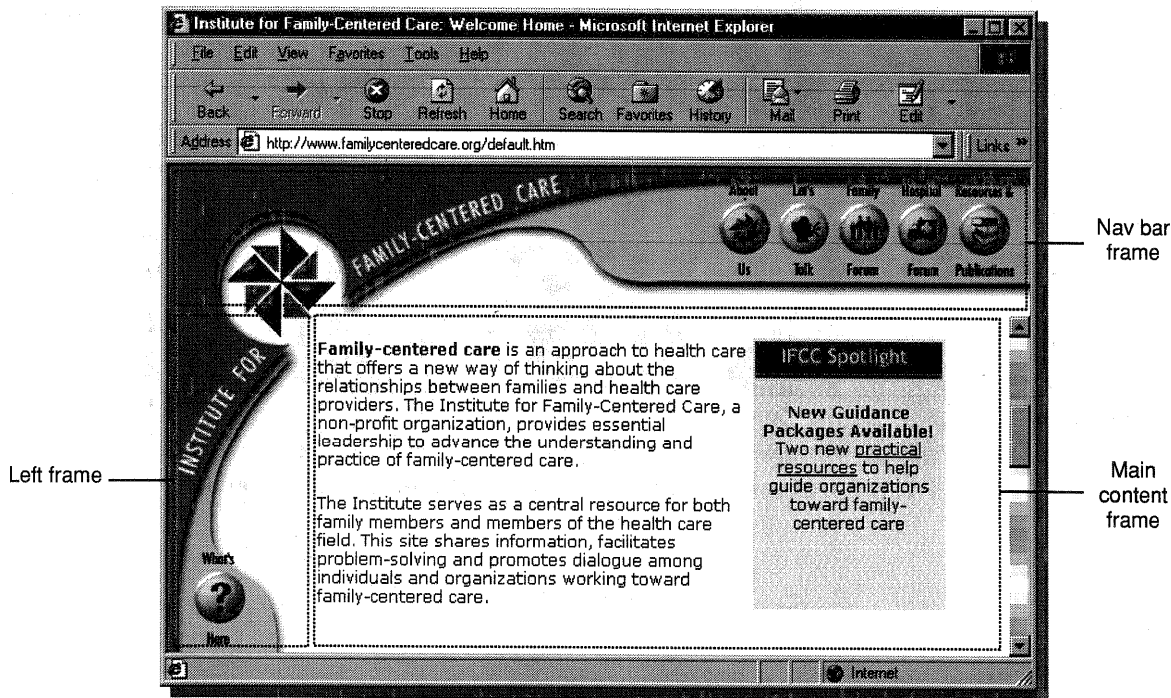


Figure 8-1: HTML document featuring two frames configured as rows

2. After it has completed downloading, scroll down the page. Note that, because these are invisible frames, they cannot manually be resized using your mouse.
3. The top and left frames do not scroll, but the content frame does. This page has been formatted with borderless frames (which you will learn to create later in this course).
4. In the top frame, click the **About Us** link. The *About Us* page will appear. Note that this page features the same basic frame layout, but with different frame sizes. The left frame is more narrow, but the top frame is slightly taller.

5. On the *About Us* page, in the top frame, click the **Resources** link. The Resource page will be downloaded and displayed in the main content frame.
6. Access www.utm.edu/~phertzel/migration.htm. The Shorebird Migration Pages site is downloaded and displayed, as shown in Figure 8-2. Note that the layout of the frames is nearly identical to the previous Web site, except that the left frame can be scrolled.



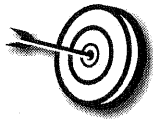
Figure 8-2: HTML document featuring two frames configured as columns

7. In the left frame, scroll down to **Black Turnstone** and click. The content frame will change to display the contents of the page you selected. All other frames will remain unchanged.
8. In the left frame, click **Curlew Sandpiper**. The page displayed in the content frame will change.
9. Position your mouse pointer over the frame border between the top and main content frames. Your mouse pointer will change to a double-headed arrow.
10. Drag the border down, expanding the size of the top frame and decreasing the size of the bottom two frames.
11. Drag the border between the left frame and the main content frame to the right. Drag it back to its original position.
12. Visit www.calfnews.com.



This frame layout is very similar to the previous site you visited, except that there is no border between the frames. Even though you can scroll the left nav bar frame, it has no border and cannot be resized. Like the previous site, you can scroll both the left frame and the main content frame.

13. Scroll down the page. Click one of the links in the left frame to change the content of the main frame.
14. Visit www.global-dental.com.



This frame layout is similar to the previous two. Differences include the fact that the left frame extends to the top of the page and only the main content frame can be scrolled. Like the last two sites you have visited, frame borders are not visible.

15. Visit www.barbecue-store.com.



This frame layout is different in that it lacks a top frame and is composed of only two frames, both of which can be scrolled. The left frame acts as a nav bar and the right frame is the content frame.

Is there a border between the frames, and can it be resized?

16. Visit www.gear.com. This is a two-frame layout. Unlike other sites you have visited, the bottom frame acts as a nav bar.
17. Click any link in the bottom frame. The contents of the main frame will change.
18. Visit www.yha.org.uk.
19. Click any of the links in the top frame. The contents of the main frame will change. What is similar and different about this site in relation to the others you have visited in this exercise?
20. Visit www.backpackers.com.au. This site is very similar to the previous site. Click any link in the top nav bar frame.

Anatomy of Frames

An HTML document featuring frames—while it appears to be a “single page” to a user—actually consists of several HTML documents carefully woven together. While you can have an unlimited number of frames in an HTML document, it is strongly recommended that you include only a few (2-5).

Sometimes unique applications of frames justify more than five frames per page, but this typically results in a confusing and unintuitive interface that overwhelms users with too much information on a single page.

Master Frame & Slave Frame Documents

Two types of documents comprise a frames page:

- master frame document: this HTML document specifies the size and position of the frames on the page;
- slave frame documents: separate HTML documents containing frame contents.

As shown in Figure 8-3, MASTER.HTM is the master frame document containing the code that specifies the layout, size, and position of three frames, comprised of content from the slave frame documents (SLAVE1.HTM, SLAVE2.HTM, and SLAVE3.HTM).

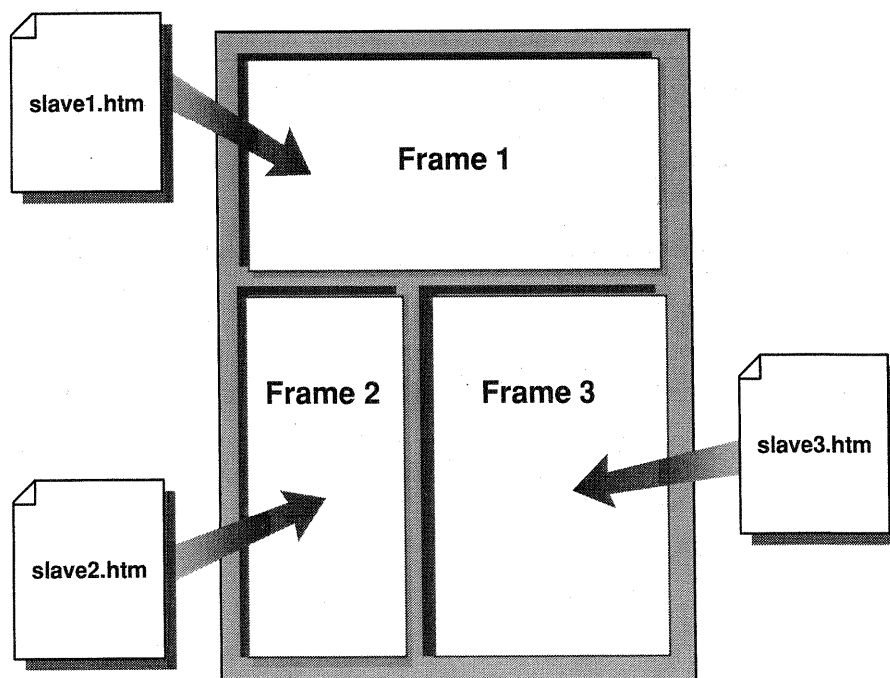


Figure 8-3: Master frame document and slave frame documents

<FRAMESET> Tag

Frames instruct a user's browser how to display frames within an HTML document in a structure called a frameset. The master frame document contains a **<FRAMESET>** tag set. The **<FRAMESET>** tag structure *replaces* the **<BODY>** tag set.



An HTML document with a **<BODY>** section cannot contain a **<FRAMESET>** section (sometimes called a *container*) and vice versa.

If you create an HTML document with both a **<BODY>** section and a **<FRAMESET>** container, a browser will ignore the frame structure and *none of the content of the frames will be displayed*. Instead, only the content of the **<BODY>** section will be shown.

<FRAMESET> is a non-empty tag with several attributes. The syntax and placement of the **<FRAMESET>** tag set is shown in the example below.



```
<HTML>

<HEAD>
<TITLE>Simple Frame Layout</TITLE>
</HEAD>

<FRAMESET COLS="50%, 25%, 25%">
<FRAME SRC=slave1.htm>
<FRAME SRC=slave2.htm>
<FRAME SRC=slave3.htm>
</FRAMESET>

</HTML>
```

COLS & ROWS Attributes

There are two major attributes of the **<FRAMESET>** tag:

- COLS
- ROWS

You can define any reasonable number of: 1) ROWS; 2) COLS; or 3) both ROWS and COLS, but you have to define something for at least one of these attributes. You cannot define a frameset with only one row and/or one column. A browser that encounters this type of erroneous frame will display a blank screen. Thus, the following minimums can be defined:

- 1) two rows and no columns; 2) two columns and no rows.

ROWS & COLS Values

The value of the ROWS attribute is a measure of the height of frame rows relative to 1) one another and 2) available browser screen area. The value of the COLS attribute is a measure of the width of frame columns relative to 1) one another and 2) available browser screen area.

Both ROWS and COLS values can be expressed via one of three different value types:

- percentages;
- pixels;
- relative scale values (sometimes called *relative ratios*).

These value types are detailed in Table 8-1. Note that the comma-separated value ranges have no space before or after the comma and *must be enclosed in quotation marks*.

Value Type	Syntax Example	Comment
Percentages	Numbers with percentages: COLS= "50%, 25%, 25%"	Recommended; easy to use
Pixels	Straight numbers: ROWS="240, 100, 140"	Not recommended due to variance in user video
Relative Scale Values	Numbers with asterisks: COLS="1*, 2*, 3*"	Recommended; not as intuitive as percentages

Table 8-1: COLS and ROWS attributes value types and syntax

Defining the Number of Rows or Columns

The number of rows or columns in a frames page is determined by the number of values defined for the ROWS or COLS attributes, respectively.

For example, `<FRAMESET ROWS="25%, 50%, 25%">` defines a frameset with *three* rows (count the comma-separated values). This example specifies the top row as 25% of the height of the browser content area, the second as 50%, and the third as 25% (counting left to right).

Rows Commingling with Columns

You can combine the ROWS and COLS attributes in a single opening `<FRAMESET>` tag in order to create more sophisticated frame configurations.



Be sure to place quotation marks around the entire value set of a ROWS or COLS attribute. Without these, the row or column is not properly displayed.

1) Percentages

The example below creates three frames arranged as rows; the top row consuming 25% of the screen height, the middle taking 50%, and the bottom taking 25%. If the user resized his or her browser on their screen, the frames in this example would adjust accordingly (because the space they share had decreased or increased).



```
<FRAMESET COLS="25%, 50%, 25%">
```



If you miscalculate and your percentages do not add up to 100%, your frames will still display properly. Web browsers scale these percentages up or down proportionately to equal a total of 100%.

2) Pixels

It is recommended that you abstain from using absolute values (pixels) when defining ROWS and COLS sizes in frame sets. This is due to the fact that users who download your HTML documents containing frames will have an extremely wide variety of video configurations—both hardware and software—on their PCs.

Imagine the difference in the way a Web page is displayed between a 14" monitor configured at 640 x 480 pixels of resolution and a 21" monitor at 1280 x 1024 pixels of resolution. It is safer practice to define the size of frameset ROWS and COLS using relative values, such as: 1) percentages or 2) relative scale values (asterisks).

3) Relative Scale Values (*relative ratios*)

The third ROWS and COLS value type is a relative scale value (often called a proportional value). Relative scale values are denoted with asterisks, as shown in the following example:



```
<FRAMESET ROWS="1*, 2*, 3*">
```

The above example defines three ROWS. Simply count the numeric values to determine the common denominator of the fraction used to proportionally scale these rows. *If an asterisk appears with no number, the value defaults to 1.* Thus, the above example specifies a common denominator of 6. The first row will be allocated 1/6 of the available screen space the second row will receive 2/6 (or 1/3), and the third will receive 3/6 (1/2) of the screen space.

<FRAME> Tag

The <FRAME> tag is inserted within the <FRAMESET> opening and closing tags. The <FRAME> tag has one necessary attribute, SRC, the value of which refers to the HTML document that appears within the frame.

The <FRAME> tag is an empty tag; its basic syntax is shown in Figure 8-4.

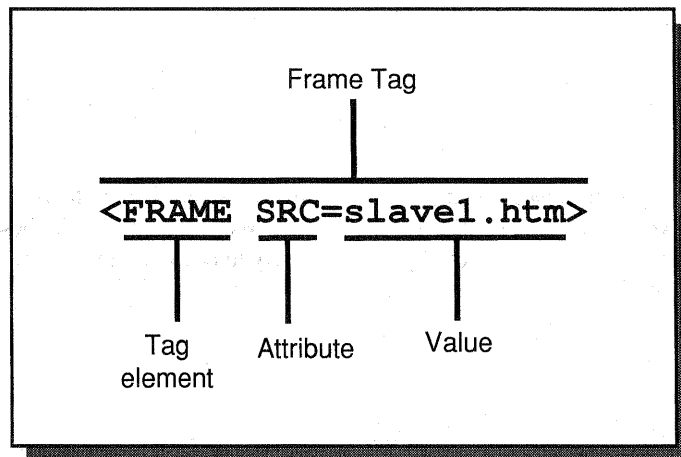


Figure 8-4: Syntax of the <FRAME> .tag

You must include one `<FRAME>` tag per frame that is to appear in your HTML document. Also, the number of rows or columns (or both) to which you refer in the opening `<FRAMESET>` tag must equal the number of `<FRAME>` tags listed between the opening and closing `<FRAMESET>` tags.

An example of use of the <FRAME> tag is shown below (this example assumes a Web page comprised of four frames configured as rows).



```
<FRAMESET ROWS="25%,25%,25%,25%">
<FRAME SRC=slave1.htm>
<FRAME SRC=slave2.htm>
<FRAME SRC=slave3.htm>
<FRAME SRC=slave4.htm>
</FRAMESET>
```

The example on the previous page loads SLAVE1.HTM into the first frame, SLAVE2.HTM into the second frame, SLAVE3.HTM into the third, and SLAVE4.HTM into the fourth. The page layout would resemble Figure 8-5.

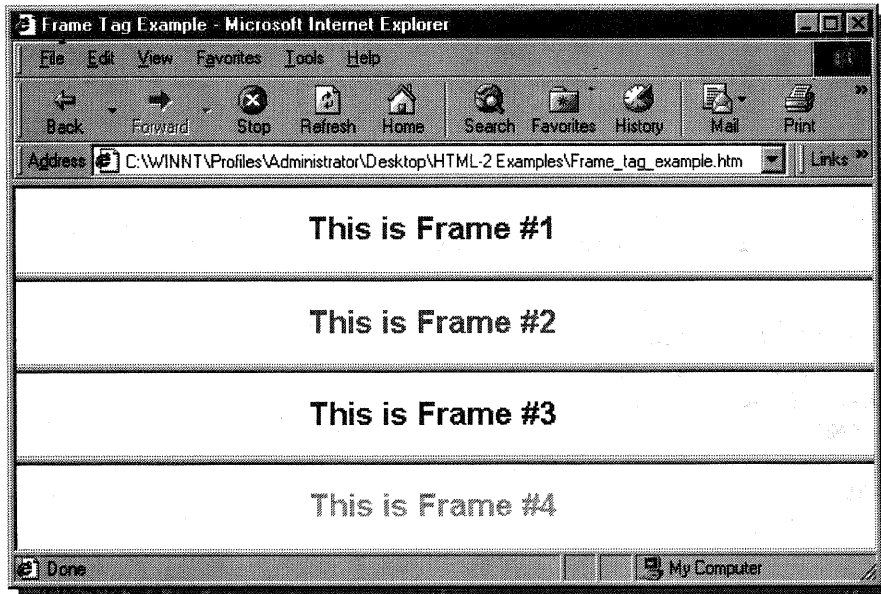


Figure 8-5: Four frames configured as rows (each with size of 25%)

By simply changing the ROWS attribute in the opening <FRAMESET> tag of the master frame document to COLS, the overall layout of the page changes dramatically and the page layout looks like Figure 8-6.

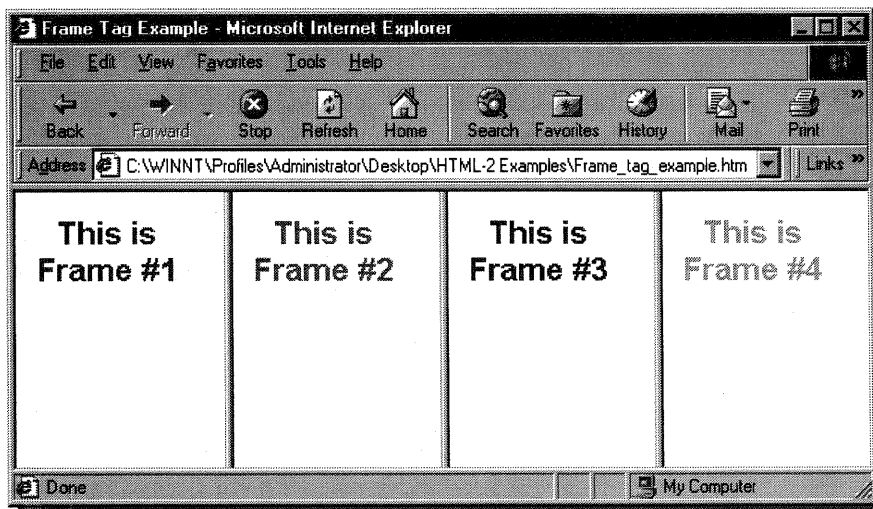


Figure 8-6: Four frames configured as columns (each with size of 25%)

Exercise 8-2: Creating a Simple Frames Layout

In this exercise, you will create a simple frames-enabled Web page comprised of rows.

1. Launch MS Notepad. A new file will automatically appear.
2. Type the following script:

```
<HTML>

<HEAD>
<TITLE>My Brothers Daryl</TITLE>
</HEAD>

<FRAMESET COLS="50%,50%">
<FRAME SRC=daryl1.htm>
<FRAME SRC=daryl2.htm>
</FRAMESET>

</HTML>
```

3. Save the HTML document as MASTER1.HTM in the HTML-2 directory on your Desktop (or drive C:).
4. Open the file DARYL.HTM from the HTML-2 folder. Format this file as an HTML document, inserting all the necessary tags (<HTML>, <HEAD>, <BODY>, etc.), and then save your changes.
5. Open the file DARYL2.HTM from the HTML-2 folder. Add the same HTML tags as above and save your changes.
6. Toggle (<ALT + TAB>) to your Web browser and open MASTER1.HTM from the HTML-2 folder.



The master frame document is displayed in your browser, along with the frame content provided by the two slave frame documents, as shown in Figure 8-7 on the following page.

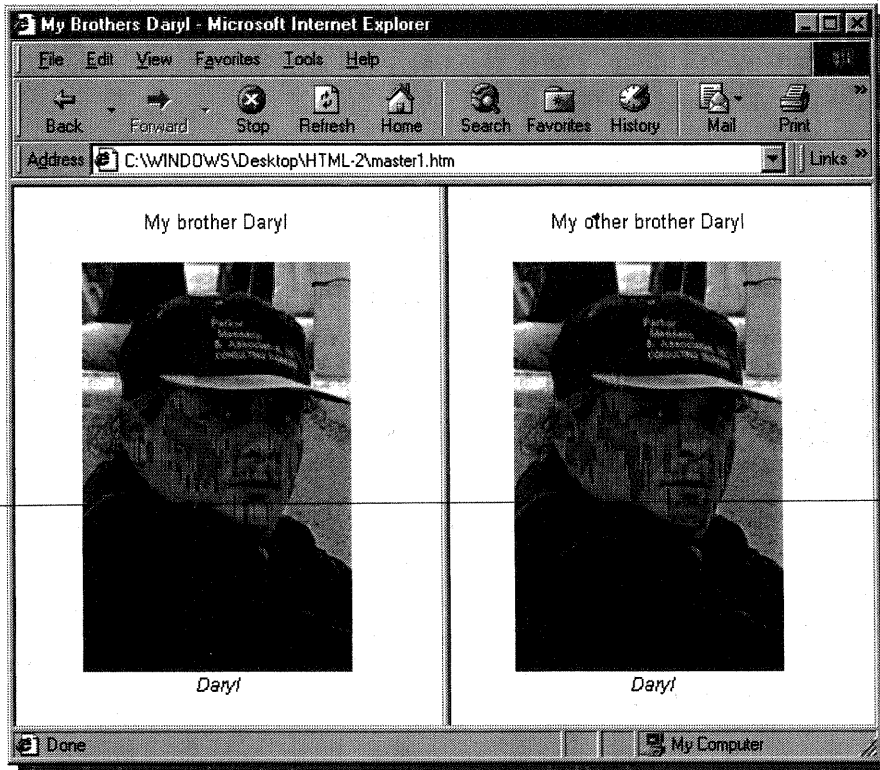


Figure 8-7: Web page displaying simple frames configuration

7. Toggle back to Notepad (<ALT + TAB>).
8. Reopen the file MASTER1.HTM. In the opening <FRAMESET> tag, change COLS to ROWS and save the file (<ALT + F>, <S> is a shortcut).
9. Toggle back to your Web browser. Refresh the Web page (<F5> in IE).¹⁷



The Web page appears with the slave frames now configured as rows (not the optimal layout for these particular slave frame HTML documents).

10. Toggle back to Notepad. Change the ROWS attribute back to COLS. Save the file.

¹⁷ There is a bug in Navigator 4.0x that does not properly refresh changes made to a master frames document using either the **Reload** button on the toolbar or the <CTRL + R> keyboard shortcut. You must reopen the file using **File ► Open Page** and click the **Open** button. Note that you can correctly refresh changes made to slave frames documents using **Reload** or <CTRL + R>; thus, if you change the content of a slave frame document referred to by a master frame document, Navigator's refresh (reload) function works properly.

Lesson 8 Summary

- ▶ Frames enable you to divide a Web page into a series of independent sections, each of which displays a separate HTML document.
- ▶ There are two types of frames documents in HTML: master frame documents and slave frame documents.
- ▶ Each frames-enabled page you create consists of several HTML documents: 1) a master document that specifies the size and position of the frames and 2) separate documents containing the contents for each frame.
- ▶ Frames are flexible in their application and configuration; an HTML scripter can decide if they show borders, are scrollable, and are movable. You can also control the amount of white space inside a frame.
- ▶ Frames are supported by Netscape Navigator 2.0, its later versions, Microsoft Internet Explorer 2.1, and its later versions.
- ▶ One popular application of frames is the application of a navigation bar (known as a “nav bar”) to an entire Web site as an aid in quickly locating information. This is especially helpful at large Web sites.
- ▶ A master frame document determines the configuration and layout of frames on a Web page. The master frame document refers to other HTML documents (called slaves), the content of which is displayed according to the instructions in the master frame document.
- ▶ Frames are created with a frameset. A frameset replaces the Body section of a Web page (created with the `<BODY>` tag). The `<FRAMESET>` tag, a non-empty tag set, creates the frameset.
- ▶ Within the `<FRAMESET>` tag, one `<FRAME>` tag must exist for each frame in the set. The SRC attribute of the `<FRAME>` tag specifies which HTML document should be loaded into that frame.
- ▶ The COLS and ROWS attributes to the `<FRAMESET>` tag determine the number of and relative size of frame columns and rows, respectively.
- ▶ You can determine the size of a row or column using values denoted as percentages, pixels, or relative scale values. Use of pixels is not recommended because as an absolute value, they will not look as you intend on some video configurations.
- ▶ `<FRAME>` tags are embedded between the opening and closing `<FRAMESET>` tags in the master frame document and refer to slave documents (similar to how `` refers to an image file to be displayed in an HTML document).